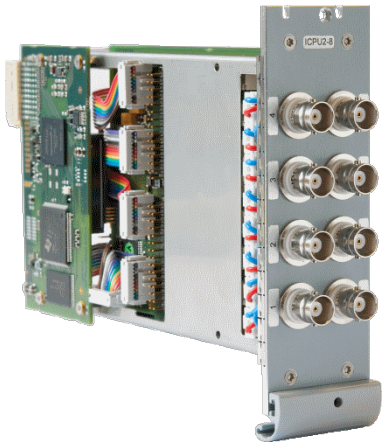
ICPU2-8 for imc CRONOS-SL/compact

8-channel IEPE/ICP-Measurement Module

The ICPU2-8 is a broadband measurement amplifier for the measurement of:

- IEPE/ICP sensors (current-fed 4 mA)
- Voltage (AC and DC coupling)

Direct connection of ICP-compatible sensors (ICP™, DELTATRON®, PIEZOTRON® sensors) takes place via BNC.



CRC/ICPU2-8

Highlights

- High signal bandwidth of up to 48 kHz
- Finely adjustable input voltage range (from ±5 mV to ±50 V)
- Input coupling switchable via software: DC, AC, AC with current supply
- Each channel with its own adjustable filter (e.g., anti-aliasing filter) and simultaneous A/D converter
- Supports imc Plug & Measure (TEDS) [2]

Typical applications

- Ideal for noise and vibration analysis and acceleration measurements

imc CRONOS*compact* - modular measurement system

imc CRONOS*compact* is a modular and reconfigurable hardware a "rack"-based series of devices available in a variety of housing sizes and device frames. imc CRONOS*compact* (CRC) plug-in-modules can be inserted into the system (CRC-400 / CRC-2000G).

Once the modules are plugged into a portable or rack-based housing, they are electrically connected to the CRC-system and are supplied by the system with power. The data storage will be managed by the CRC-system.

Rack-based modules ("-R") differ from the standard modules only in terms of the front panel's attachment mechanism.

imc CRONOScompact plug-in-modules

imc CRONOScompact portable housing

Overview of available variants

Standard version		ET Version [2]	
Order Code:	article no.	article no.	Remarks
CRC/ICPU2-8	11700057	11710032	for imc CRONOS*compact*
CRC/ICPU2-8-R	11700121	11710080	for imc CRONOS*compact* RACK
CRSL/ICPU2-8		11800097	imc CRONOS-SL variant

1 The measurement module has only limited TEDS capability: The TEDS type DS2413 which is used in most current IEPE sensors is not supported!

2 ET: Version in extended temperature range

Included accessories

- Calibration certificate with test equipment verification as per ISO 9001 (manufacturer's calibration certificate, PDF)
- Getting started with imc CRONOS*compact* (CRC) respectively CRONOS-SL (one copy per delivery)

Optional accessories

Mounting brackets for fixed installations of imc CRONOS*compact* devices (CRC)

• CRC/BRACKET-CON	mounting bracket 90°	11700153
• CRC/BRACKET-90	mounting bracket for DIN-Rail	11700152
• CRC/BRACKET-BACK	mounting bracket for DIN-Rail	11700154

Mounting brackets for fixed installations of imc CRONOS-SL devices (CRSL)

• CRSL/BRACKET-90	mounting bracket 90°, mounting on a flat surface	11800080

Technical Specs - ICPU2-8

Inputs, measurement modes, terminal connection		
Parameter	**Value**	**Remarks**
Inputs	8	
Measurement modes	voltage measurement IEPE-sensor with current-fed	

Sampling rate, Bandwidth, Filter, TEDS			
Parameter	**Value typ.**	**min. / max.**	**Remarks**
Sampling rate	≤100 kHz		per channel
Bandwidth	0 Hz to 48 kHz 0 Hz to 30 kHz		-3 dB -0.1 dB
Filter (digital) cut-off frequency characteristic order	10 Hz to 20 kHz		 Butterworth, Bessel low pass or high pass filter: 8th order band pass: LP 4th and HP 4th order Anti-aliasing filter: Cauer 8.order with f_{cutoff} = 0.4 f_s
Filter cut-off frequency (high pass, 3rd order,-3 dB)	0.43 Hz 1.06 Hz		ICPU2-8 standard version ICP, ranges ≤±10 V ICP, ranges >±10 V
Resolution	16 Bit		internal processing 24 Bit
TEDS	conforming to IEEE 1451.4 Class I Mixed Mode Interface only limited! The currently mainly used TEDS type DS2431 is not supported!		

General			
Parameter	**Value typ.**	**min. / max.**	**Remarks**
Overvoltage protection		±50 V	continuous channel to chassis
Maximum input voltage		-11 V to +15 V	between ±IN and CHASSIS; input range ≤±10 V
Input coupling	AC, DC, AC with current feed (ICP)		
Input configuration	differential Single-ended		software-configurable
Input impedance range >±10 V range ≤±10 V	 333 kΩ 0.67 MΩ 1 MΩ 908 kΩ 1.82 MΩ 20 MΩ		at DC-voltage resp. 50 Hz ICP (Single-ended) AC (differential) DC (differential) ICP (Single-ended) AC (differential) DC (differential)

Voltage measurement			
Parameter	**Value typ.**	**min. / max.**	**Remarks**
Input ranges	±50 V, ±25 V, ±10 V, ±5 V, ±2.5 V, ±1 V, ..., ±5 mV		
Gain error	0.02%	≤0.05%	of the reading, at 25°C
Gain drift	+20 ppm/K·ΔT_a	+80 ppm/K·ΔT_a	ΔT_a=|T_a -25°C| ambient temperature T_a
Offset error	0.02%	≤0.05% ≤0.06% ≤0.15%	of the input range, at 25°C >±50 mV ≤±50 mV ≤±10 mV
Offset drift	±40 µV/K·ΔT_a ±0.7 µV/K·ΔT_a ±0.1 µV/K·ΔT_a	±200 µV/K·ΔT_a ±6 µV/K·ΔT_a ±1.1 µV/K·ΔT_a	ranges >±10 V range ±10 V bis ±0.25 V ranges ≤±0.1 V
CMRR (common mode rejection ratio) Input ranges: ±50 V to ±10 V Input ranges: ±5 V to ±50 mV Input ranges: ±25 mV to ±5 mV	 62 dB 92 dB 120 dB	 >46 dB >84 dB >100 dB	common mode voltage (DC..60 Hz): ±50 V ±10 V ±10 V
Noise	 14 nV/√Hz 0.4 μV_{rms}		DC coupling 1 kHz bandwidth 0.1 Hz to 1 kHz

Constant current supply	Value typ.	min. / max.	Remarks
ICP current sources	4.2 mA/channel	±10%	
Compliance voltage	25 V	>24 V	
Source impedance	280 kΩ	>100 kΩ	